

**C-A Unreviewed Safety Issue (USI) Form**

Title of USI: PHENIX Helium Bag

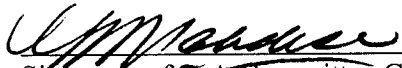
Description of USI (use attachments if necessary):

(see attached memo)

Title and Date of Relevant SAD: RHIC SAD 12-30-1999

Committee Chair or ESHQ Division Head must initial all items. Leave no blanks:

ITEM	APPLIES	DOES NOT APPLY
Decision to not revise the current SAD and/or ASE at this time:  The hazard associated with the proposed work or event is covered within an existing SAD and/or ASE.  SAD Title and Date: <u>RHIC SAD 12-30-99</u>  This Form and attachments, if necessary, shall be used to document the USI until the next revision of the appropriate SAD.	ETL  ETL  ETL  ETL	
Decision to submit a revised SAD and/or ASE to the BNL ESH Committee:  The hazard associated with the proposed work is not appropriately included in an SAD.		ETL  ETL

  
Signature of C-A Committee Chair or C-A ESHQ Division Head

10-26-01  
Date

Edward T Leland  
Signature of C-A Associate Chair for ESHQ

10-26-01  
Date

## Memo

*date:*            *October 19, 2001*

*to:*             *William Lenz*

*from:*          *Michael Sivertz*

*subject:*       *PHENIX Helium bags*

This memo is to inform you that PHENIX has installed two Helium Bags in the region surrounding the Beam Pipe between the MVD and the Drift Chamber on both the East and West sides of the IR. The purpose of these helium bags is to replace the air in that area with helium which produces less scattering of particles and fewer photon conversions.

The helium bags are composed of inner and outer windows which are 0.002 inch thick polyethylene and side walls made of 0.007 inch thick polyethylene. The joints are made by heating the overlapping region to make a gas seal. Each bag is fashioned in the shape of a section of a conical ring, occupying an angular bite of roughly 100 degrees. The shape was chosen to fill the space between the North and South poles of the Central Magnet, between a radius of 0.85 m and 2.5 m. There are gas fittings of 1 inch diameter in each of the four outer corners of each bag. These are for filling, venting and exhausting the gas in the bag.

The helium bags are kept in place by polyethylene strings which are strung between the North and South poles of the Central Magnet at both the inner and outer radii of the bag. This keeps the bag from impinging on the MVD and the DC when inflated. The helium bags are separately vented through a bubbler which keeps the pressure in the bags below 0.25 inches of water. Vented gas is routed to the LCVS for removal from the hall.

Since the operating gas is helium, and the total volume of the two bags is small (approximately two thirds of a cubic meter) the addition of the helium bags to the PHENIX experimental hall does not represent a safety concern. A small amount of helium leaks from the bags through holes and through the thin windows at all times. This helium rises to the ceiling where it is vented from the hall. Should the bags suffer a catastrophic failure, all the helium would rapidly rise to the ceiling and leave the hall before it could result in an ODH hazard.

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# Memo

*date:* April 6, 2001

*to:* C-A Experimental Safety Review Committee (ESRC)

*from:* Yousef Makdisi

*subject:* Minutes of the Review of the PHENIX Integration Safety System

**Present:** W. Christie, P. Cirnigliero, K. Foley, M. Gaffney, R. Karol, J. Levesque,  
Y. Makdisi, C. Pearson, A. Pendzick, J. Peters, P. Pile

T. Chujo, J. Haggerty, P. Giannotti, W. Lenz, E. O'Brien, S. Sato, M. Sivertz,  
T. K. Shea,

As this represents the annual PHENIX safety review, the scope covered:  
The status of the safety systems for those detectors installed for the previous run and the governing SMCS, the new subsystems for this run, and the proposed installations at a later date.

The new subsystems included: the South Muon Magnet; the Muon Tracker South and HSSD that interlocks the high voltage and power; the Muon Identifier South with a non-flammable gas-mixture of CO<sub>2</sub> and isobutane; the West carriage Pad Chambers; trigger circuit boards; the new event builder PCs in the counting room. All of which were previously subjected to ESRC reviews as well as an Operational Readiness reviews.

A preview of detectors planned for later installation include: Helium bags, the NTC and the TOF T0 scintillation counters.

The Helium bags, anchored to the CM magnet, will be installed between the MVD and the Drift Chamber on both carriages with a 10cm gap between the bags and the DC. The walls are 10 mils flame-retardant polyethylene the windows are 4 mils polyethylene. The committee felt this was acceptable considering the small amount of flammable material.

The NTCs are 4 - 5 mm thick by 30cm diameter BC404 scintillation counters with embedded BCF-92A fibers to be placed at either end of the MVD and anchored to the Central magnet. These will be readout using 4-H7195 Hamamatsu phototubes. SHV/RG 59 HV, and 8274/BNC will be used for high voltage and signal cables respectively. The TOF T0 counters are 8 scintillation counters 100cm x 8cm x 2cm with phototubes on either end. These will be placed in front of the drift chambers. The support structure is yet to be designed.

The following are the action items:

- Provide documentation of the trigger boards to the ESRC. (Haggerty)
- Install and interlock the two flammable gas detectors under the Muon Identifier South. (Giannotti)
- Install and interlock the HSSD and flammable gas detection for the West carriage Pad Chambers. (Giannotti)
- Considering the added equipment, follow up on the need for fire suppression in the PHENIX counting room (Levesque, Haggerty)
- Check the PHENIX local emergency plan to make sure the counting house circuit breaker is noted. (Makdisi, Lenz)
- Update the sweep procedure to account for the newly installed platforms. (Ingrassia, Lenz)
- PHENIX assumed the task of maintaining the detector VESDA smoke detection and TOF suppression systems. Provide a plan to assure compliance. (Giannotti)
- Install the Trace-Tec for Muon Tracking station 1 and interlock to its high voltage and low voltage power. (Giannotti)
- Provide documentation for the 1-hr shift leader SMCS training. (Giannotti)
- Assess the consequences, in the GMH as well as the IR, of the newly installed large capacity CO2 supply. (Sivertz)
- Document the unreviewed safety items (USI) to the SAD regarding the installation of new subsystems. (Haggerty, Lessard)
- Document, with configuration control, the changes to the SMCS. (Giannotti)
- Closeout the ESRC action items from previous reviews (Makdisi, Lenz)
- Update the documented work procedures. (Lenz)
- Carry out the “pink sheet” checks of the electronics racks. (Haggerty)
- Carry out the flammable gas “blue sheet” checks of the SMCS. (Giannotti, Pendzick)
- Establish PHENIX watch shifts. (Frawley)
- Training of the respective shift crew. (Lenz)

cc:

T. Kirk  
D. Lowenstein  
M. Murtagh  
P. Pile

File